



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,705	01/22/2002	Kazuhiko Higashi	Q68150	6333

23373 7590 05/25/2006

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

JARRETT, RYAN A

ART UNIT	PAPER NUMBER
----------	--------------

2125

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,705

Applicant(s)

HIGASHI, KAZUHIKO

Examiner

Ryan A. Jarrett

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-24 is/are pending in the application.
- 4a) Of the above claim(s) 14-16 and 21-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/23/02, 8/21/03, 1/21/05, 7/15/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group III claims 13 and 18-20 in the reply filed on 4/24/06 is acknowledged.

Method claim 17 (Group VII) has been re-evaluated in light of the prior art and is deemed to share many of the same special technical features as that of claim 20. Therefore, claim 17 has been included in Group III and has been fully examined below.

Claims 17-20 have been generally indicated as containing allowable subject matter below. The restriction requirement among groups I, II, and IV, V, and VI, as set forth in the Office action mailed on 3/20/06, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). **The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable claim.** Claims 14-16 and 21-24 are withdrawn from further consideration because they do not require all the limitations of an allowable generic linking claim as required by 37 CFR 1.141.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim(s) presented in a continuation or divisional application include all the limitations of a claim that is allowable in the present application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the

provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Priority

2. This application is a 371 National Stage entry of PCT/JP00/03243, filed 05/22/2000.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 01/23/2002, 08/21/2003, 01/21/2005, and 07/15/2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Drawings

4. It appears that Figures 18-24 should be designated by a legend such as –Prior Art– because it appears that only that which is old is illustrated, per Applicant's description of these figures on pages 1-14 of the specification. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

The reference characters "(1)-(7)" in Fig. 3 are not mentioned in the accompanying description of Fig. 3 on pages 24-25 of the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be

labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are further objected to because:

-Fig. 1 shows the cable (7,8) attached to Port 1. However, the specification (pg. 30 line 11, pg. 30 line 14, pg. 30 line 25, pg. 31 line 16) discloses that the cable is attached to the Port 2. Either Fig. 1 should be amended, or the specification should be amended to correct for this discrepancy.

-In Fig. 24, it appears that "THOUGHT" should be changed to "THROUGH".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Art Unit: 2125

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

This list of drawing objections may not be all-inclusive. Applicant should review the drawings and make any necessary corrections.

Specification

7. The disclosure is objected to because of the following informalities:

On page 4 line 15, it appears that "transmits" should be inserted after "station".

On page 5 line 7, it appears that "Fig. 21(a)" should be changed to "Fig. 21(b)".

On page 26 line 9, "while" should be changed to "While".

On page 26 line 13, "ad" should be changed to "and".

On page 27 line 7, "Embodiment 2" should be changed to "Embodiment 1".

On page 27 line 19, "System 2" should be changed to "System 1".

On page 32 line 15, it appears that "Port 1" should be changed to "Port 2", per Fig. 9.

On page 33 line 13, for example, the term "connection NG" has not been described or defined in the specification. What does NG stand for? Does this term correspond to the "connection state" of claim 20? Clarification is required.

On page 33 line 17, "Fig. 7(d)" should be changed to "Fig. 7(c)".

On page 34 line 17, it appears that "office" should be changed to "station".

On page 35 line 1, "Fig. 11" should be changed to "Fig. 9".

On page 35 line 8, it appears that "office" should be changed to "station".

On page 43 line 2, it appears that "Port 1" should be changed to "Port 2".

On page 43 line 11, it appears that "Port 1" should be changed to "Port 2".

Fig. 1 shows the cable (7,8) attached to Port 1. However, the specification (pg. 30 line 11, pg. 30 line 14, pg. 30 line 25, pg. 31 line 16) discloses that the cable is

Art Unit: 2125

attached to the Port 2. Either Fig. 1 should be amended, or the specification should be amended to correct for this discrepancy.

Appropriate correction is required. This list of objections to the specification may not be all-inclusive. Applicant should review the specification and make any necessary corrections.

Claim Objections

8. Claims 17-20 are objected to because of the following informalities:

In claim 17 line 24, "transmit" should be changed to "transmitting".

In claim 17 line 24, "the resulting command" should be changed to "the resulting port information command" for proper antecedent basis.

In claim 18 line 3, "outputs" should be changed to "output", due to the plural "peripheral devices" in line 2.

In claim 18 line 3, "calculates" should be changed to "calculate", due to the plural "peripheral devices" in line 2.

In claim 18 line 4, it appears that "devices" should be changed to "device", since Applicant appears to be referring to a singular "most downstream node" in line 4.

In claim 19 line 2, "calculates" should be changed to "calculate", due to the plural "peripheral devices" in line 2.

In claim 20 line 6, "calculates" should be changed to "counts", in order to give proper antecedent basis to the limitation "node count" in line 12 of claim 20. If this change is made, then it appears that the limitation "calculates" should be inserted before "the transmission timing" in line 6.

In claim 20 line 12, "retains" should be changed to "retain".

Appropriate correction is required. The list of claim objections above may not be all-inclusive. Applicant should review the claims and make any necessary corrections.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 13 and 18-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are generally directed to an abstract idea (§101 judicial exception). For claims including such excluded subject matter to be eligible, the claim must be for a practical application of the abstract idea. Diehr, 450 U.S. at 187, 209 USPQ at 8; Benson, 409 U.S. at 71, 175 USPQ at 676.

To satisfy section 101 requirements, the claim must be for a practical application of the §101 judicial exception, which can be identified in various ways: (1) The claimed invention “transforms” an article or physical object to a different state or thing, or (2) The claimed invention otherwise produces a useful, concrete and tangible result.

Practical Application by Physical Transformation

In the present case, claims 13 and 18-20 do not “transform” an article or physical object to a different state or thing.

Practical Application That Produces a Useful, Concrete, and Tangible Result

For eligibility analysis, physical transformation “is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application.” AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. In determining whether the claim is for a “practical application”, the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but

rather that the final result achieved by the claimed invention is “useful, tangible and concrete”.

“TANGIBLE RESULT”

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different thing. However, the tangible requirement does require that the claim must recite more than a §101 judicial exception, in that the process claim must set forth a practical application of that §101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application”). “[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection.” Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Coming, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 (“It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted...”). In other words, the opposite meaning of “tangible” is “abstract”.

Although “system” claims 13, 18, and 19 recite tangible items such as a “communication cable”, a “servo amplifier”, and a “spindle amplifier”, the tangible system merely functions to implement abstract ideas. For example, the final result of claim 13 is “a communication cycle...is split into a plurality of sub cycles”. The final result of claim 18 is “calculates the time”. And the final result of claim 19 is “calculates a transmission timing”. These final results fail to produce any tangible real-world result.

Art Unit: 2125

The Office deems (as evidenced by the prior art and Applicant's own admission) that the arrangement of hardware in system claims 13, 18, and 19 is not what the Applicant has invented and is seeking to patent, i.e., Applicant is relying on the programmed functionality of the hardware for patentability, and that programmed functionality is an abstract idea rather than a practical application.

Claim 20 depends from claim 19 and incorporates the same deficiency. However, claim 20 otherwise produces a tangible final result. The "retains the node count and transmission timing...in order to perform communications between peripheral devices" is deemed to be a tangible final result.

Likewise, the "retaining the number of connections and transmission timing" of method claim 17 is deemed to be a tangible final result.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites the limitation "the peripheral devices...calculates the time required for the peripheral devices as the most downstream node to receive the synchronization frame". However, there is no antecedent basis in the claim for any "synchronization frame" having ever been transmitted to the most downstream node in the first place, so it is not clear how the most downstream node can "receive" a synchronization frame that has not clearly been transmitted to it (by the language of the claim). Claim 18 only recites that a synchronization frame is transmitted from the numerical control apparatus to a first peripheral control device. There is no mention of the synchronization frame being further transmitted to the most downstream node. The claim does recite that the first peripheral control device "outputs a synchronization signal", but it is not clear if Applicant intends for the "synchronization signal" output from the first peripheral control device and the "synchronization frame" received by the most downstream node to be the same thing. Clarification is required.

Claim 19 recites the limitation "the connection information transmitted from the numerical control apparatus in initial communications" in line 3. There is insufficient antecedent basis for this limitation in the claim. Claim 18 recites that a "synchronization

frame" is transmitted from the numerical control apparatus to the peripheral devices, but it is not clear if this previously recited "synchronization frame" is supposed to correspond to "the connection information". Clarification is required.

Claim 20 recites the limitation "the data volume of communication frames transmitted to the peripheral devices" in line 8. There is insufficient antecedent basis for this limitation in the claim. Clarification is required.

Claim 20 recites the limitation "the data volume of communication frames transmitted by the peripheral devices in communications between peripheral devices" in line 9. There is insufficient antecedent basis for this limitation in the claim. Clarification is required.

Claim 20 recites the limitation "the transmission timing" in line 6. There is insufficient antecedent basis for this limitation in the claim. This transmission timing appears to be different from the "transmission timing" recited in line 2 of claim 19, since the "transmission timing" of claim 19 is calculated by the peripheral device, but the "transmission timing" of claim 20 line 6 is calculated by the numerical control apparatus. Clarification is required.

Claim 20 recites the limitation "the transmission timing" in line 7. There is insufficient antecedent basis for this limitation in the claim. This transmission timing is related to communications between the peripheral devices and therefore appears to be different from the "transmission timing" recited in line 2 of claim 19, and from the "transmission timing" recited in line 6 of claim 20. Clarification is required.

Claim 20 recites the limitation "the transmission timing" in line 10. There is insufficient antecedent basis for this limitation in the claim. It is unclear exactly what "transmission timing" is being referred to here. Is it the "transmission timing" of claim 20 line 6, or the "transmission timing" of claim 20 line 7, or both? Clarification is required.

Claim 20 recites the limitation "the node count...transmitted from the numerical control apparatus in initial communications" in line 12. There is insufficient antecedent basis for this limitation in the claim. Although a the number of nodes is calculated in claim 20 line 5, there is no recitation of this node count being transmitted to the peripheral devices. Clarification is required.

Claim 20 recites the limitation "the...transmission timing transmitted from the numerical control apparatus in initial communications" in line 12. There is insufficient antecedent basis for this limitation in the claim. Although claim 20 line 10 recites "transmits the transmission timing to the peripheral devices", there is no antecedent basis for this transmission being "initial communications". The only antecedent basis for "initial communication" is in claim 19 line 4, and this is in reference to transmitting "connection information", not a "transmission timing". Clarification is required.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. US 5,822,615.

Yamashita et al. discloses:

13. A numerical control system comprising:

a numerical control apparatus (e.g., Fig. 31 #1: “BASIC SYSTEM OF THE NC UNIT”);

a communication cable including a data transmission cable for data transmission (e.g., Fig. 31 #121, col. 1 lines 44-52, Fig. 2, Fig. 20) and a data transmission cable for data reception (e.g., Fig. 31 #122, col. 1 lines 44-52, Fig. 2, Fig. 20); and

a plurality of peripheral devices including at least one of a servo amplifier, a spindle amplifier and a remote I/O unit (e.g., Fig. 31 #2: “REMOTE.IO”) the peripheral devices serially connected with the numerical control apparatus through the communication cable in order to perform time-division-based communications between the numerical control apparatus and the peripheral devices (e.g., col. 5 line 11: “time division”, col. 19 line 45: “time division”, col. 24 line 32: “time division”, EN: *This is an intended use of the cable, not positively recited as a functional limitation of the system.*),

wherein a communication cycle (e.g., Fig. 9: "ONE CYCLE INTERVAL", Fig. 18: "CYCLE TIME") in the communications between the numerical control apparatus and the peripheral devices is split into a plurality of sub cycles (e.g., Fig. 9: "N#0-N#9", Fig. 18: "NC-RIO TRANSMISSION FRAME") to process data (e.g., Fig. 9: "DATA#0-DATA#3") to be processed in the communication cycle in the split plurality of sub cycles.

Allowable Subject Matter

16. Claim 17 is allowed, pending correction of the minor informalities noted in the claim objections above.

As best understood, claim 20 would additionally be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

As best understood, claim 18 and 19 would also be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, and 35 U.S.C. 101, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. However, with the exception of incorporating the features of claim 20 (which produces a tangible result), it not clear how or if the 35 U.S.C. 101 rejections with respect to claims 18 and 19 could be otherwise overcome.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mito US 5,946,215 discloses a machine tool controlling network communication controlling system.

Takahashi US 5,949,754 discloses a communication control method in a network system based on a duplex loop transmission system.

Shidara et al. US 5,963,444 discloses a control apparatus having a remote PLC device.

Aoyama et al. US 5,990,638 discloses a synchronizing method for communication.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan A. Jarrett whose telephone number is (571) 272-3742. The examiner can normally be reached on 10:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan A. Jarrett
Examiner
Art Unit 2125

A handwritten signature in black ink, appearing to read 'R A Jarrett', with a stylized flourish at the end.

5/15/06